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PART-TIME COOPERATIVE INDUSTRIAL EDUCATION

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FOREWORD

The tremendous development in our trades and industries is one of the outstanding movements of the twentieth century. Industrial, economic and social changes have been wrought by the decline of the older forms of apprenticeship, and by the introduction of specialization in factory production. It should be noted also that during the last thirty years there has probably been an appreciable decrease in the proportion of skilled artisans among the immigrants. One of our greatest immediate needs is that of providing adequate opportunities for those whose interests, capacities and ambitions lead toward industrial and trade work.

This bulletin is the outgrowth of a demand for information and for guidance regarding a type of part-time training that has demonstrated its merit to employers, to employes, and to the community. Vocational education to render real service must, in its scope, be broader than technical training. Part-time cooperative industrial education combines practical work in industry with desirable related and non-vocational instruction in school; it combines theory and practice—the one supplied by the public schools, the other by industry.

This bulletin was prepared by Dr. F. T. Struck, of this Department, under the direction of Mr. L. H. Dennis, now a Deputy Superintendent. Our sincere appreciation is due to Mr. F. A. R. Hoffeditz, Director of Vocational Education, York, Pa. for his interest and many helpful suggestions, and to those engaged and interested in successfully working out this problem for Pennsylvania.

It is planned to re-issue this bulletin again next year and it is hoped that those interested in this type of instruction generously contribute to its successful revision.

FRANCIS B. HAAS,
Superintendent of Public Instruction.

Harrisburg, Pa.,
September 5, 1925.

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PART-TIME COOPERATIVE INDUSTRIAL EDUCATION

ORGANIZATION AND ADMINISTRATION

PURPOSE AND SCOPE OF THE BULLETIN

In 1917 when the National Vocational Act was passed by Congress our government found that not more than one in three of the men who claimed to be skilled mechanics possessed skill of journeyman grade. At the close of the war there were over 500,000 unfilled requisitions for technical specialists to complete the army organization alone[1]. In the field of private enterprise the situation is no better today. We need more well trained craftsmen. Industry is organized for production, not instruction.

If vocational industrial education given by the public schools is to function it must have not only the approval of industry, but also its cooperation and participation.

Perhaps no plan of industrial education utilizes to better advantage the combined educational and training facilities of industry and the schools than this plan described in this booklet.

It is our purpose to describe briefly what is meant by part-time cooperative industrial education; to discuss some of the features of the plan, to show how it is put into operation, and to indicate where it is being conducted in Pennsylvania at this time.

In discussing the subject of part-time cooperative industrial education, we wish to limit the field of inqury to part-time cooperative industrial education of less than college grade, given under the auspices of, or with the cooperation of, the public schools—not the public schools typical of ten or twenty years ago, but the modern school that incorporates vocational education in its program, and that requires all trade teachers to have had at least six years of trade experience in the subject or trade taught.

KINDS OF PART-TIME SCHOOLS AND CLASSES

It is important to keep in mind that there are several rather distinct types of part-time industrial schools or classes that are being conducted under public supervision and control.

This bulletin is primarily concerned only with part-time cooperative education, but the other types of part-time schools are listed here by way of explanation and contrast.

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[1] See Report of Federal Council of Citizenship Training, Washington Government Printing Office 1924.

1. *Part-time Continuation Schools and Classes.* Part-time continuation schools or classes are now required by law, and are in operation in twenty-five or more States in the Union. They give instruction to persons fourteen to sixteen years of age who are engaged in remunerative employment. Classes are usually held from four to eight hours per week. Instruction is usually general in character, as when girls in a textile plant are taught current events and civics; it may be of the trade preparatory type, as exemplified by classes receiving trade instruction in a trade other than the one in which they are engaged; and finally, it may be of trade extension type, as for example, a class of apprenticed machinists who receive part-time continuation instruction eight hours per week for thirty-six weeks in subjects designed to extend and broaden their knowledge of the trade at which they are employed.

2. *Part-time Trade Preparatory Schools and Classes.* Part-time education is taken to mean education given on a part-time basis at a time other than evenings, and usually during regular hours of employment or what corresponds to the latter. Part-time trade preparatory education comprises those forms of trade education that are given to persons who are contemplating entrance upon, but who have not yet entered the specific trade that is being learned. Such part-time trade preparatory education may or may not be given in the continuation school; it may be given in the form of slack-season instruction, and it may also be given in a scheme of part-time cooperative education.

3. *Part-time Trade Extension Schools and Classes.* Trade extension education consists in instruction that extends and amplifies knowledge or skill in the vocation in which the learner is employed. It may be given in part-time continuation schools, in slack-season classes, and in part-time cooperative schools or classes. While trade preparatory education may be thought of as "preventive medicine" in that it is designed to prevent entrance upon the vocations without essential basic knowledge and experience, trade extension education is like a remedial prescription in that it is planned to remedy a situation that already exists—namely, the employment of individuals in trade and industrial occupations without proper training for the same.

It is well to keep in mind that part-time trade extension education is preeminently suited for those who have left the all-day schools, or who are contemplating doing so in the future immediately before them, in order to enter upon employment. It is plain that the traditional courses in general education no longer interest such pupils, and no longer serve as a means of holding them in the all-day school. The problem, therefore, is not one of general education versus vocational education, but rather one of some form of part-time industrial education, evening industrial education, or nothing. Which shall it be?

4. Part-time Cooperative Industrial Schools and Classes. Since the various types of part-time education differ materially in several major respects, it seems advisable to qualify the term "part-time" in such a way as to promote clarity of thought and expression. The part-time continuation education, offered as it usually is, four, six, or eight hours per week to employed minors between certain ages, is distinctly different from part-time cooperative education. It is general education, (in the main part-time cooperative instruction is strictly vocational,) and is given under a scheme that is based on active and voluntary cooperation between employers, on the one hand, and public educational authorities representing the child, on the other hand. In other words, part-time cooperative industrial education calls for a genuine cooperative understanding and agreement. Consensus of current practice places approval on an approximately 50-50 distribution of the learner's time as regards school work and work in industrial plants. Specifically, the learner usually spends about one half of each day, week, month, year, or other period of time, at study—usually in school buildings—and the other half in productive work at industrial plants. Several concrete examples will be described later. A number of cooperative plans involving pupils of high school grade now in operation in Pennsylvania call for alternate periods of two weeks in school and in industry.

DEFINITION OF PART-TIME COOPERATIVE INDUSTRIAL EDUCATION

By part-time cooperative industrial educaton is meant a form of vocational industrial education, re-imbursable under the Smith-Hughes Act, that is given to persons over 14 years of age who have entered upon a trade or industrial pursuit. The learners alternate between the industrial establishments and the day schools, on a week-about, or preferably and more commonly on a two-week-about plan.

It aims to unite theory and related subject matter about given vocations with practical participaton in productive work in these vocations, by means of the cooperative plan. This plan was first used in the United States by Dean Schneider, of the School of Engineering of Cincinnati University, in the fall of 1906. Since that time it has been used with learners receiving instruction of less than college grade as well as with collegiate instruction.

The cooperative plan assumes that the most effective vocational education that can be given in a broad way is vocational education given cooperatively between manufacturers and employers, on the one hand, and the public schools, on the other. It is based upon the fact that cooperative education is mutually beneficial to the employer, the learner or employee, and to society at large.

NEED FOR PART-TIME COOPERATIVE EDUCATION

1. *The Social Need.* Sane participation and effective perpetuation of the social political and religious heritages of our democratic civilization depend upon the greatest self-realization, in terms of the general social welfare of all persons. In order that this may be brought about we must have education for health, for vocational pursuits, for citizenship, and for right use of leisure. Part-time cooperative industrial education is necessary as one of several ways of providing vocational proficiency for persons engaged in trade and industrial pursuits. It is needed to supplement other forms of industrial education in order to make possible development and maximum achievement for society at large and for workers in industry in particular. Untrained, or partially trained workers cannot use their energy and natural endowments to the best advantage.

2. *The Economic Need.* The United States, as well as England, France, and other foreign countries, has through progressive legislation taken state and nation-wide recognition of the fact that all-day instruction must be supplemented by means of far-reaching forms of part-time instruction. Few facts are plainer to thinking men and women than the fact that the schools cannot ever hope to duplicate the elaborate, expensive shop equipments used in manufacturing establishments. Even if the initial installation could be made in schools, it would soon become out of date in many instances because of improvements constantly being made in materials, processes and in machine design. It is likewise evident that manufacturers—especially those employing small groups of workers—cannot afford to operate their own training plants because of the mobility of labor. The schools cannot do this training work alone. Neither can the manufacturers do it unassisted except in rare cases. There is need then for a combination of resources and effort in order to assure adequate industrial education such as used to be given under the old apprenticeship agreements.

The economic loss resulting from inefficient work, from frequent change of employment, and from idleness due largely to vocational incompetence is tremendous. This waste of human time and effort can be appreciably reduced by organized or systematic industrial education.

3. *The Educational Need.* It is a well-established fact that large numbers of youths go into industry unprepared for their occupations. Only one-third of those who enter the first grade get into high school, and two-thirds of the latter leave before completing the twelfth year. In Pennsylvania, according to H. R. Bonner, Bulletin No. 19, 1920, U. S. Bureau of Education, only 14.4 percent of the total population is in attendance upon high schools. Our school population is divided as follows: 89.4 percent in elementary schools, 8.5 percent in secondary schools, and 2.1 percent in higher schools. We cannot escape the conviction that in a State which holds the enviable position industrially that is held by the Commonwealth of Pennsylvania, there should be far greater provision for trade and industrial education than there now is. Close to one and one-half millions of persons are engaged in industrial and mechanical pursuits in Pennsylvania. Less than one per cent of this number are receiving trade instruction in the public schools of the State. Not all of them are in need of additional training, and some require only a small amount of education that can be given them; but it is a fact that both the schools and industry must face this issue resolutely and cooperatively. It must also be recognized that there is need for part-time cooperative industrial education because certain kinds of important forms of trade and industrial education do not readily lend themselves to the all-day type of instruction. The educational need in industrial as well as in other forms of education is for increasing variability—for instruction that grows out of a correlation of social, economic and political needs on the one hand and of individual interests, capacities, and ideals on the other.

GENERAL AIMS AND OBJECTIVES

It is fundamental to think of youths who have entered part-time cooperative education as young wage earners, rather than school pupils; they are employed half time and evaluate education largely in terms of its contribution to immediate needs—namely, to vocational proficiency, and to greatest possible individual development for general social usefulness. The instruction that is given them at public expense must replace "faith" objectives by objectives that are real, practical and of demonstrable value toward the ends that are to be achieved. It is not justifiable to burden courses of instruction with subject matter that has little more than tradition to recommend it; it must be of the kind that can clearly be of significance toward the realization of individual and social growth.

Part-time cooperative industrial education should give: ..

a. Specific trade skills
b. Specific trade and technical knowledge
c. Specific contributions to health and citizenship

It should aim to prepare individuals in part, or in entirety (depending upon the vocation involved), for effective participation in trade and industrial pursuits. This should be done not in a narrow way, but with full realization that citizenship, health happiness, and vocational efficiency are vitally interdependent, and with the consciousness that all forms of vocational education must be integral aspects of a unified and democratic program of education.

These aims are to be achieved only by the full realization that close and detailed cooperation is involved between schools and industry, and that the combined educational resources of both agencies must be utilized in these important undertakings. The initiative rests with the schools rather than with industry since the schools are specially charged with the responsibility for providing education to the public at large.

AGE OF LEARNERS AND ENTRANCE REQUIREMENTS

The age at which pupils should be permitted to enroll in cooperative courses depends to quite an extent on the nature of the cooperative work to be undertaken. Let us take, for example, a town in which the machine industry is the leading and only one of importance, and where such industry makes it a practice not to take boys before they are sixteen to eighteen years of age. Here the boys spend the first one or two of the four years of their industrial course entirely in the high school before entrance upon the cooperative plan. Under this plan the boys when they take up shop work in industrial plants are older, more mature and consequently more reliable than younger boys are likely to be. In this case the incentive to leave school during the first or second year is largely removed because in such a town there are few jobs that boys under sixteen can secure, and the community maintains the practice of keeping practically all pupils in school up to or beyond sixteen years of age.

Quite the reverse situation is more frequently found in many industrial communities. Varied and so-called semi-skilled industries—that is, industries in which employees need to possess but a relatively small amount of technical knowledge and in which a job or a vocation is learned in a short time—attract boys and girls of fourteen years and up. Even though high grade skilled industries are found there, many boys and girls do not have the knowledge of the vocations such as should be supplied through a competent vocational counselor; consequently they drift into jobs that pay a relatively high initial wage, that include no plan of instruction, and that promise little or no future to which thinking, ambitious boys and girls can look forward. In such instances it is likely to prove unwise to postpone entrance to the cooperative course until the completion of the second year of high school (tenth grade). Thirty percent of those entering high schools in such communities may not stay two years unless they are held by a feature such as the cooperative industrial course upon which they may enter at the completion of the ninth grade or one year of high school work. It is largely for this reason that in the majority of cases in Pennsylvania the practice is followed of requiring the completion of only one year of high school work before cooperative work is undertaken.

In general, pupils should be sixteen years of age before they are placed in industrial plants on a cooperative basis. It is also desirable that they be near the completion of their ninth grade work before they apply for cooperative instruction. Exceptions need to be made, however, to these requirements, but only after such individual cases have been thoroughly examined by a vocational counselor who is acquainted with the pupil's home conditions, school achievement, his capacities, interests and ambitions, and with the vocational opportunities of the community.

The question of economic need should not be the sole determining factor as to whether a boy or girl should take the regular high school course or the cooperative one. To be sure, the latter makes it possible for a pupil to help to earn his or her way through high school, but there are pupils who leave school for other than financial reasons. They leave because the traditional types of instruction do not include enough action, not enough of what these youths consider to be practical instruction having rather immediate value in promoting their hopes and ambitions; and so they leave school in large numbers to find jobs, having little knowledge of the vocations, and little or no special training for them. Many of these youngsters can be held in school by means of part-time cooperative industrial courses.

When pupils can no longer be held in the all-day school they should be encouraged to enroll in part-time cooperative courses if their age, strength, and general capacity and inclination make it at all feasible—even though they do not fully measure up at the time of entrance to the requirements set for such courses. In other words, while a certain uniformity of requirement is essential, there must be enough elasticity to serve the best interest of as many young people as possible.

COOPERATIVE COURSE NOT FOR SUB-NORMALS

No one should be permitted to enroll in the cooperative course who is mentally and physically unfit. This does not mean that a person who has lost a limb cannot succeed in skilled industrial pursuits, but it does mean that much caution needs to be exercised to see that such persons receive instruction along lines in which their special handicap is not a limiting factor.

Occasonally persons having but a superficial knowledge of the requirements in trade and industries assume that almost anybody can become a mechanic. With this thought in mind they try to make vocational classes the dumping ground for subnormal pupils. It has been proved clearly that boys and girls who are "problems" in the conventional school work usually remain "problems" in vocational work. There are exceptions, to be sure, but it should be clearly recognized that no amount of instruction can make up for actual lack of native capacity. In justice to sub-normal pupils, and in fairness to others, it is no more than right that sub-normal pupils be excluded from vocational industrial classes. Such pupils should be taken care of in classes providing especially for them. Employers will not knowingly hire a person for skilled work who is in any way below normal mentally. They cannot afford to. They are bidding for the most capable young people they can attract because they are seeking "timber" from which they may ultimately draw their future foremen and managers.

THE GENERAL PLAN

The cooperative plan is based on a mutual understanding whereby either an individual or a number of employers in cooperation with the public schools agree to give thorough trade instruction to young workers. The employers usually take the pupil-apprentices or "co-ops" in pairs, so that one of the pair is always employed in industry, while the other is in school getting related theory and non-vocational education. The boys alternate between the industrial establishments and the school, usually on a week-about, or preferably on a two-week-about plan. The half-day-about plan is also used. The length of such periods may be suited to the specific needs of the trade or industry.

In order that shop production may proceed smoothly and continuously, the boy in school goes to the manufacturing plant, where his alternate is at work, on the Saturday forenoon preceding the Monday marking the beginning of the former's period of shop work in order to receive any instruction that may be necessary to carry on the work.

All or nearly all of the shop work given is usually given in the commercial shops, the learners being on an equal footing with other employees of the plant. The pupil-apprentices usually receive the prevailing apprentice rates.

Boys wishing to enter the part-time cooperative course are often asked to express their desire at the close of the school year in June in order that they may be given a try-out of eight weeks (during the summer vacation period observed by most schools) in the trade or industry of their choice. During this probationary period the learner is carefully watched by the coordinator and by the foreman, while the boy on the other hand is getting first-hand knowledge of the advantages and disadvantages of the work. If he likes the work, sees a future in it, and shows aptitude and capacity for it, he enrolls for instruction.

School shops will usually be found to be desirable parts of the general plan. Such shops are not needed in every instance because employers may be willing to take pupils who have not had previous shop experience, and the training facilities in the industrial plants may be satisfactory from the standpoint of giving well-rounded shop instruction. School shops are particularly useful as a means of giving preliminary training, for supplementing training given in industry, and for taking care of pupils temporarily in case of temporary shutdowns in industrial establishments.

The high school trade apprenticeship course including cooperative instruction as it is being conducted in Pennsylvania, is designed to give a full high school education leading to a high school diploma, and in addition to journeyman rating, or to such portion toward the latter as is warranted by the learner's achievement while taking the course. This is made possible through careful selection of school studies, and because of the earnestness of purpose that contact with practical shop work under commercial conditions arouses in boys. Particular stress is laid on related subjects such as mathematics, drawing, and science. Care is taken that good citizenship is fostered by means of the social sciences, such as American history and civics. In fact, no essential high school subject needs to be omitted from the cooperative course of instruction when it is organized on a five year basis.

The shop work given in the cooperative course is so arranged as to provide for advancement on the part of the learner from simple to more difficult and complex work, and it is planned to give sufficient rotation or change of work throughout the trade or industry in order to assure well-rounded instruction.

Instruction is given as far as possible on productive work. Practical methods are used, and prevailing trade standards are met, but at the same time the dominant aim of such shop work is instruction, and production is incidental, just as the reverse holds true after journeymen standing or trade efficiency has been attained.

ADVANTAGES OF THIS FORM OF VOCATIONAL INSTRUCTION

1. *From the standpoint of the Employer.* Under the existing scheme of specialization which characterizes modern factory production, and which is bound to increase as time goes on, it is difficult to give the all-round training in industry that is needed to produce capable foremen and others in supervisory or executive positions. It is also difficult to develop all-round trained men who can fit into a variety of places in case of emergency unless some definite scheme of instruction is maintained.

Through the cooperative course employers are able to attract better prepared workers than can be secured otherwise—workers who have a broader technical background and who are high school graduates. They can secure workers through the cooperative plan who have the basic training in drawing, science, and other subjects that are fundamental to the mastery of skilled work, and to those in various kinds of supervisory and executive positions.

In addition to attracting boys having a better educational background for industrial work, the cooperative plan serves as a means of attracting boys who, on the average, have a wider vision, and who are more ambitious to make the most of their capacities and opportunities than can be attracted without such a plan. The double test of high school requirements, coupled with the practical shop requirements, quickly eliminates those who are not fit for the work.

While there is bound to be a certain amount of labor turn-over, it is felt that with right treatment a large proportion of those trained can be held for years of service. In York, Pennsylvania, for example, records covering a period of ten years show that approximately sixty per cent of those graduating from the cooperative course have remained in the city where they are employed at the kind of work for which they were prepared, or at work allied to the latter, and seventy two per cent are following their trade locally and elsewhere.

2. *From an Educational Standpoint.* From the standpoint of the school and the pupil the cooperative plan makes possible the realization of theory through its immediate practical application. Instead of receiving instruction that has deferred values he is meeting present needs; instead of learning abstract theory he is getting applied theory for which he can see an evident need.

The vocational and the related subject matter taught is that which has proved its intrinsic worth to those engaged in the trades and industries. It is presented to pupils by men or women who are masters of their respective vocations and who are in the position to select subject matter with reference to its vocational value. By means of the cooperative scheme "doing and thinking about doing" are brought together, in a practical work-study plan. It is well known that "there is little impression without expression." The part-time cooperative plan is designed to provide proper opportunity for self-expression through productive work.

The reciprocal relation existing between the school and the shop under this plan, makes possible the fullest utilization of the educational facilities of both the schools and industry. A knowledge of such up-to-date practical equipment, coupled with experience and related knowledge secured in the cooperative course, makes it possible for the learner to advance more rapidly and to rise higher in the trade or industry than without such instruction.

The plan is valuable also in that pupils may in part earn their way through high school. The average amount earned during the year 1923-24 in the York cooperative industrial course by Sophomores is $103.31, by Juniors $216.46, and by Seniors $279.99. A number of boys could not stay in high shcool if they could not earn money while in attendance. The total amount earned during the year by the 199 boys was $3575.00, or an average of $179.65 per pupil.

The contact that boys get with practical production work stimulates them to do their very best. They develop a seriousness of purpose that is reflected in good school work as well as good work in the shops, for they can plainly see the need for school instruction in their chosen vocation.

The close relationships that are brought about between industry and the schools by the cooperative plan are helpful to the progress of efficient education.

No small amount of educational value is derived from the fact that part-time pupils learn to work and to get that true, wholesome conception of physical work that is lacking in the training of many young persons today.

OBJECTIONS TO THE PLAN

Upon first thought some persons are inclined to doubt the practicability of having two men work alternately at one machine, or at a given kind of work. The best answer is found in the fact that it is being done successfully and to the entire satisfaction of all persons concerned.

From the standpoint of the school one of the greatest problems is that of providing vocational and related instruction that adequately meets the needs of persons preparing for practical trade and industrial pursuits. This is largely due to the shortage of properly qualified teachers, and a shortage of suitable lesson material.

Some people question the educational value of shop instruction given in any other than a so-called logical sequence. It has been pretty well demonstrated that the psychological order is better than the so-called logical one. Care should be taken that shop instruction provides progressive work, but it makes no difference whether a boy learns to run a lathe before he does a shaper or vice versa. Each is a unit of instruction in itself.

PART-TIME COOPERATIVE EDUCATION NO EXPERIMENT

The statement has been made in this bulletin that cooperative industrial education is no longer an experiment. By way of amplification a few brief descriptions are herewith given of cooperative instruction that is being successfully conducted in Pennsylvania.

THE HIGH SCHOOL COOPERATIVE INDUSTRIAL

_Course at York_* The cooperative industrial courses at York are among the most successful being conducted in Pennsylvania. The York Board of Public Education in cooperation with the Manufacturers' Association is doing an outstanding work in cooperative education. A detailed description of the work is to be found in the bulletin mentioned in the footnote on this page.

The cooperative course in York was introduced in 1911 through the joint efforts of the school board and the York Manufacturers' Association. Pupils select their courses upon entrance to the high school. The first year of instruction is limited to courses given entirely in school. This makes it possible for boys taking the regular high school work to change over to the cooperative course and vice versa at the end of the first year. It also insures more maturity in pupils before work in the industrial plants is undertaken on the two-week-about plan.

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The course is not designed to prepare for college, though adjustment to this end is made when desired through postgraduate work. The cooperative course is four years in length. Upon its completion the regular high school diploma is granted, to which is added an additional certificate which reads as follows:

* "The Cooperative Industrial Course in the York High School," issued by the Superintendent of Schools.

DIPLOMA

(York, Pennsylvania)

This is to certify that ________________ has completed in a
Name
satisfactory manner, the shop work of the Industrial course and has served his apprenticeship at ______________ in the plant of
Trade

____
Name of Plant

Signed________________ General Manager
________________ Superintendent

Date ____________

The following table shows the number of pupils who have been employed by various firms cooperating with the Board of Education. These figures do not include the number of pupils in preparation for cooperative work.

Year	*Number of Pupil Workers*
1916	70
1917	86
1918	100
1919	145
1920	167
1921	191
1922	161
1923	195
1924	199
1925	203

The policy is being followed in York and elsewhere in the State of restricting enrollment in vocational classes to such numbers as can readily be placed in the local industries. At the present time, (1925) fifty firms are cooperating with the Board of Education in the operation of cooperative courses.

The superintendent's report shows that approximately sixty per cent of the graduates of the cooperative course are employed in York at the kind of work for which they were prepared, or in closely allied work.

COOPERATIVE EDUCATION IN PHILADELPHIA

The following course of study shows how Philadelphia introduces cooperative courses in the last year of the high school period. The shop work mentioned is varied according to the trade involved. In the case of architectural or mechanical draftsmen it becomes drafting practice unless it is found advisable to give shop experience to the pupil-apprentice as an essential background for later work in the drafting office.

PHILADELPHIA INDUSTRIAL COURSE

Cabinetmaking, Carpentry, Machine Construction, Patternmaking

First Year	H Term	G Term	Second Year	F Term	E Term
Algebra	4	4	Algebra	4	------
Drawing—Mechanical	4	4	Drawing—Related	4	4
English	4	4	English	4	4
History Ancient and Medival (Industrial)	4	4	Geometry—Plane	------	4
Science—General	4	4	History—English (Economic)	3	------
Shop—Related	4	4	History—American (Economic)	------	3
Shop—Trade	6	6	Physics	4	4
Physical Education	0	0	Shop—Trade	8	8
			Shop—Related	3	3
	30	30		30	30

Third Year	D Term	C Term	Fourth Year	B Term	A Term
Chemistry	4	4	(Cooperative one-half time in industry, one-half time in school, alternate two-week periods)		
Drawing—Related	4	3	Bookkeeping	2	2
Economics (Social Science)	3	3	Drawing—Related	2	------
English	4	4	English	5	5
Geometry—Plane	5	------	Shop—Trade	10	12
Shop—Trade	10	9	Strength of Materials	5	5
Strength of Materials	------	2	Trigonometry—Plane and Applications	6	6
Trigonometry—Plane	0	5			
	30	30		30	30

KINDS OF TRADES OR VOCATIONS FOR WHICH COOPERATIVE INSTRUCTION IS BEING GIVEN

That a variety of trades may be taught even in the smaller industrial communities is exemplified by the city of York, having a population of about 50,000. Eleven different trades are taught in the high school cooperative department in this city. The shop work in each case is given in the industrial establishments.

During the year ending June 30, 1924, part-time cooperative training was given in Pennsylvania in connection with the following trades and occupations:

1. Auto mechanics
2. Bricklaying
3. Blacksmith
4. Boilermaker
5. Carpentry
6. Cabinetmaking
7. Drafting, architectural
8. Drafting, mechanical
9. Electricity
10. Electrical construction
11. Foundry
12. Glass—art construction and installation
13. Iron worker
14. Jewelry repair
15. Machinist
16. Moulders
17. Patternmaking
18. Printing
19. Plumbing
20. Plastering
21. Refrigeration
22. Woodworking
23. Construction in paper and cardboard
24. Sheet metal work

It is not necessary to have a number of pupil-apprentices in given plants. Sometimes employers are willing to take as low as one apprentice—even though by so doing they have an apprentice only half of the time.

COOPERATION BETWEEN INDUSTRY AND PUBLIC SCHOOLS

The development of effective industrial education depends largely on the cooperation that can be brought about between industry and the schools. The success or failure of industrial education given entirely or cooperatively by the public schools is determined very largely by their activities outside of school walls. Certain school people say they are willing to give any special education that is "demanded" in their communities. They do not consider it their duty to seek the opportunities for service that they ought to render, for example, to industrial workers. Persons engaged in trades and industries usually are not well informed either as to what the public schools should provide, or what they are at the time providing in the way of opportunities for special vocational education. In such cases, therefore, industrial education is likely to remain unaccomplished because of the lack of initiative on the part of those charged with the development of such instruction in the community, and because of lack of knowledge about opportunities on the part of employed youths and adults.

On the other hand, school people will need to have an intimate knowledge of the industries, if effective industrial education is to result. This does not mean that trade secrets need to be made public property, but simply that there be close cooperation and clear mutual understanding regarding the kind, character, and scope of instruction that may be given to learners. Representatives of industry should be on advisory boards to the school organiation, and authorized representatives of the schools should have access to places where pupil-apprentices are employed.

PROCEDURES IN ESTABLISHING PART-TIME COOPERATIVE SCHOOLS AND CLASSES

In communities having no director of industrial education the initial step may well consist in getting in touch with the Director of the Bureau of Vocational Education of the State Department of Public Instruction. A meeting may then be called of interested persons to whom the plan can be explained by a representative of the

State Department of Public Instruction. If circumstances and conditions in the local community will warrant, it may be desirable to engage at his suggestion some one having the proper experience and training to make a study of how and to what extent the industries and the schools can cooperate in that particular community. The person making such a study either alone or with others can be a person who is eligible to become the director of industrial education in the place. His service for a few weeks or a month, depending on the size and complexity of the local industries, may be paid for by the local board of education, by the industries, or by both. The board of education is not obligated to employ permanently the person making this study, but may do so in case he meets their expectations and those of the State Department of Public Instruction. It is evident of course that this experience of studying first hand the local community is a valuable asset to an incoming director or supervisor whose work will consist in developing industrial education of various kinds. The new director's work may consist of a program involving a division of time between teaching, promotion, and supervision, or it may not involve teaching.

As an alternative to the above plan it may be possible to have a study of the local industries made wholly by persons in the employ of the board of education or the local industries, in cooperation with representatives of the State Department of Public Instruction. It is desirable in any event to know definitely certain facts relative to the character of the community, its people, its present educational facilities, and its industries before the cooperative or any other program of industrial education is begun. Among other things it will be necessary to make sure that the types of industrial education contemplated in a community are such as promise most in terms of the individuals, the industries, and the general community welfare It is the policy of the State Department of Public Instruction to approve or subsidize from State or Federal funds only industrial classes in trades or vocations the graduates of which can normally be absorbed in the local or adjacent industries.

In communities that already have a director, or some one in charge of their industrial education program, the initial procedure in establishing part-time cooperative schools or classes usually consists of the director making a study—either with or without the cooperation of the State Department of Public Instruction. On the basis of such a study a proper program may be planned. In any case it is fundamentally essential to explain the plan to employers whose cooperation is sought. In the case of cooperative education the plan must be explained not only to the managers and higher officials of the concerns but to the foremen and minor executives as well, for the latter come into first-hand contact with the pupil-apprentices, and their attitude toward the latter is important.

Having explained the plan to the representatives of industry on the one hand and to the pupils and school people on the other, there remains the task of organization and of showing to all concerned that the results are worth while to them. Industrial education differs in this respect from general education. The results of industrial education can be largely measured in terms of capacities to produce goods and to perform service, and therefore the success or failure of industrial instruction is readily evident. This is not true of general education, for in the latter the results are often not tangible and are not so easily measured.

STUDY OR SURVEY AS A BASIS FOR PROGRAM

The exact nature and scope, as well as the means and methods employed in studies or surveys that are to serve as a basis for organizing part-time cooperative schools or classes, vary considerably. In general, there are two types of surveys: the *general* survey which seeks to make a contribution by means of recommendations growing out of a general study, and the *specific* survey which is undertaken to get facts relative to a restricted, or specific, problem, such as the need for industrial education in a given community. Educational surveys may also be either extensive or intensive in character.

The Federal Board for Vocational Education, Washington, D. C., publishes under the caption of "Miscellaneous 168, Trade and industrial education survey blanks, and a discussion of the methods of procedures, forms, and organization of survey committees" material that is suggestive and helpful. It may be secured free of charge. Blank forms are therein presented that are divided into the following three groups:

A. Field for Training. This group provides for the collection of field data from which may be deduced the occupations for which training can be given effectively in that community.

B. Training Agencies and Entrance Requirements. The second group of blanks provides for the determination of the particular training agency through which the training can best be given in harmony with local conditions.

C. The Determination and Classification of Content. The third group of blanks provides for the analysis and classification of content for those occupations or parts of occupations for which it has been established that effective vocational training can be given through a determining agency.

In making a survey with a view toward the promotion and establishment of industrial education the following topics are suggestive:

1. A determination of the industries to be studied.
2. Number of persons employed.
3. Classification of workers according to occupation, sex, age, and position.
4. Probable number of new workers needed annually in these different vocations.
5. A determination of the teaching content for such of these vocations as lend themselves to a teaching program.
6. The formulation of agreements in conformity with which employers and school people agree to provide part-time cooperative or other forms of industrial education.

HOUSING FACILITIES

The housing problem for part-time cooperative instruction presents less difficulty than do other phases of industrial instruction because the cooperative shop or trade work is done in the industrial establishments of the community.

In order to give proper pre-employment and other preparatory instruction to cooperative pupils it will be advisable to have equipment for prevocational shop work in the school system.

It is also desirable to have school shops with equipment that can be used for all-day and for evening industrial instruction, and which may be used for preparatory work for cooperative pupils. It may also supplement equipment available in industry by permitting study and work with machines that are not there represented or that are not available for such work because of production requirements. Such machinery can also be used in case of emergency shut downs in the plants.

It will be necessary to have drawing room, laboratory facilities, and sometimes other special rooms for teaching related subjects such as drawing and science. These facilities, together with shops for prevocational and trade preparatory instruction, should be provided for pupils in all communities in which important industral work is being done.

For school districts wishing State and Federal aid, the Department of Public Instruction has set the following minimum requirements:

1. In general, the housing facilities must be ample to provide for the curriculum that is to be offered.
2. Provision for pre-employment shop work must be made when designated by the Department of Public Instruction.

3. At least one room for mechanical drawing, one science laboratory, and a recitation room must be available for cooperative pupils unless it is evident that they are not needed.

4. The housing facilities must provide for segregated class organization for the related subjects, such as mathematics, science, drawing, and trade theory.

5. There is no good reason why segregated classes need be maintained in general subjects, such as civics, history, English, economics, and public speaking, other than that it is found advisable to have separate class organization because the pupils alternate between the school and industry. A certain amount of contact between pupils taking various courses and having varying backgrounds of experience is mutually advantageous.

EQUIPMENT REQUIREMENTS

One of the many good features of the cooperative plan is that it does not require school districts to buy the many expensive machines that would otherwise be needed.

1. School districts wishing State and Federal aid must provide equipment for prevocational education and for such supplementary shop and laboratory equipment as may be designated by the State Department of Public Instruction. Owing to greatly varying conditions and requirements each case needs individual consideration.

2. School districts having equipment for all-day or evening industrial instruction may utilize the same for part-time instruction.

3. In general the equipment must be adequate to provide for the curriculum as approved.

AIMS OR OBJECTIVES IN COURSES OF STUDY

One of the first questions and undoubtedly a fundamental question when discussing contemplated educational work, is one regarding the aim or purpose that such instruction is to serve. If the aim is clearly determined, subject matter and methods of instruction may be adapted to the ends sought.

The controlling aim of part-time cooperative education is to teach trades or vocations in their entirety, or in part, and to give learners, in addition, fundamental, social, civic, and economic instruction that will tend to make them efficient workers, and broad-minded loyal citizens.

In determining upon subject matter the following considerations should be kept in mind:

1. The shop and trade practice taught should reflect in kind and in method the practice as exemplified by successful industrial experience. For example, if hack-saws are used by carpenters for general sawing, such saws should be used in teaching the trade. Since they are not wisely used by carpenters they ought not to be the mainstay for general sawing taught carpenters in industrial schools. For the same reason, neither should furniture making be tolerated as vocational carpentry.

2. Other things being equal, the subject matter should be made up of things that are most significant in attaining the aims set forth. If a positive case cannot be made out in favor of any given subject matter, it is certainly of doubtful value, and should be replaced by something having demonstrable value toward the objectives in mind.

3. Other things being equal, the courses of study should call for the experiences that are adaptable to educational programs. It may be, for example, that casting patterns in soft metals has but slightly less educational value than casting in steel. Since the latter is not so well adapted to average school conditions the former may take its place, and work with molten steel may be secured in industry.

4. Other things being equal, courses of study should aim to cover the things the learner is not so likely to learn in his out-of-school experiences. There are facts and experiences that are common, that are significant to society, and that lend themselves to educational programs, but that are readily obtained out of school. In view of the need for conserving time, energy, and public funds, such facts or experiences should receive little school time.

JOB ANALYSIS AS A MEANS OF DETERMINING SUBJECT MATTER

The method of job analysis, as developed largely by the Federal Board for Vocational Education during recent years, represents an achievement of note in the field of industrial education. It has very definite value to industrial education, as well as to education as a whole. Before much progress can be made toward the attainment of the objectives held in view for part-time cooperative industrial education, there must be made careful analyses of the jobs for which training is to be given. Such analyses will reveal just what is required in the way of trade skill, technical knowledge, related science, mathematics, drawing, trade theory, and general knowledge or skill in order that workers may be well equipped to perform any given jobs. Each trade or occupation must be analyzed into its component jobs, and each of the latter must then be studied to determine their teaching content. When this is done, objectives based on actual requirements may take the place of objectives based largely on mere tradition.

CURRICULUM REQUIREMENTS

In planning the curriculum the following requirements must be met if State or Federal subsidy is to be used:

1. The curriculum must be approved in writing by the State Department of Public Instruction.
2. School instruction must be given for at least a minimum of 144 clock hours per year.
3. The number of hours devoted to shop work or to practice of the trade must be at least equal to that devoted to related and non-vocational instruction.
4. The minimum number of hours required for trade practice will be 1200 hours per year.
5. The minimum number of hours required for school work will be the equivalent of eight hours per week for persons fourteen to sixteen years of age, and four hours per week or its equivalent for persons over sixteen years of age, for as many weeks as school is in session.
6. Trade practice must be on a useful and productive basis. This means that it must measure up to trade requirements and must be such as is commonly performed in the trade or vocation; the product may be used by the school district or it may be sold.
7. Between fifty and sixty per cent of the time devoted to school instruction must be given to related subjects such as drawing, mathematics, science, and trade theory.
8. The remaining forty or fifty percent of the time devoted to school instruction may be given to desirable non-vocational subjects such as social studies, English, History, Economics, and Public Speaking.
9. The curriculum should provide, whenever possible, for prevocational instruction, for vocational and educational guidance before entrance upon cooperative training and for "follow-up" during the training period and after graduation or completion of the course.

TYPE COURSES OF STUDY

The following is a type course showing how the subjects may be distributed in a part-time trade extension cooperative course for machinists. This course is merely suggestive, and can be modified to suit local needs.

THREE YEAR TRADE EXTENSION PART-TIME COOPERATIVE COURSE FOR MACHINISTS

Year One

Related subjects	Clock Hours	Non-Vocatonal Subjects	Clock Hours
Mechanical drawing	75	English	75
Mathematics	75	American History and Civics	75
Trade theory	75	Elective	75
Total	225	Total	225

Year Two

Related subjects	Clock Hours	Non-Vocational Subjects	Clock Hours
Mechanical drawing	75	English	75
Mathematics	75	Industrial History	75
Physics	75	Elective	75
Total	225	Total	225

Year Three

Related subjects	Clock Hours	Non-Vocational Subjects	Clock Hours
Mechanical drawing	75	English	75
Chemistry	75	Economics	75
Trade theory	75	Elective	75
Total	225	Total	225

COOPERATIVE EDUCATION FOR A TOWN OF LESS THAN 25,000 POPULATION

The cooperative course of study may be undertaken by a small school district, and may be broadened as the need arises. Diagram 1 shows such an arrangement for a city of about 12,000 population.

It will be noted that no shop work is being given in the elementary grades and only pattern making in the ninth and tenth grades. Diagram 2 represents the expanded curriculum. Boys in the seventh and eighth grades will receive a prevocational instruction in woodshop, drawing and machine shop, and the high school boys will receive instruction in pattern making and machine shop practice in the all-day general industrial school prior to entering the part-time cooperative course.

This plan makes it possible for pupils to choose one of three paths at the expiration of the tenth grade. They may take the two year part-time cooperative industrial course, they may elect the college preparatory course, or they may leave school. Should pupils taking the cooperative course later decide to go to college they can do so by taking postgraduate work.

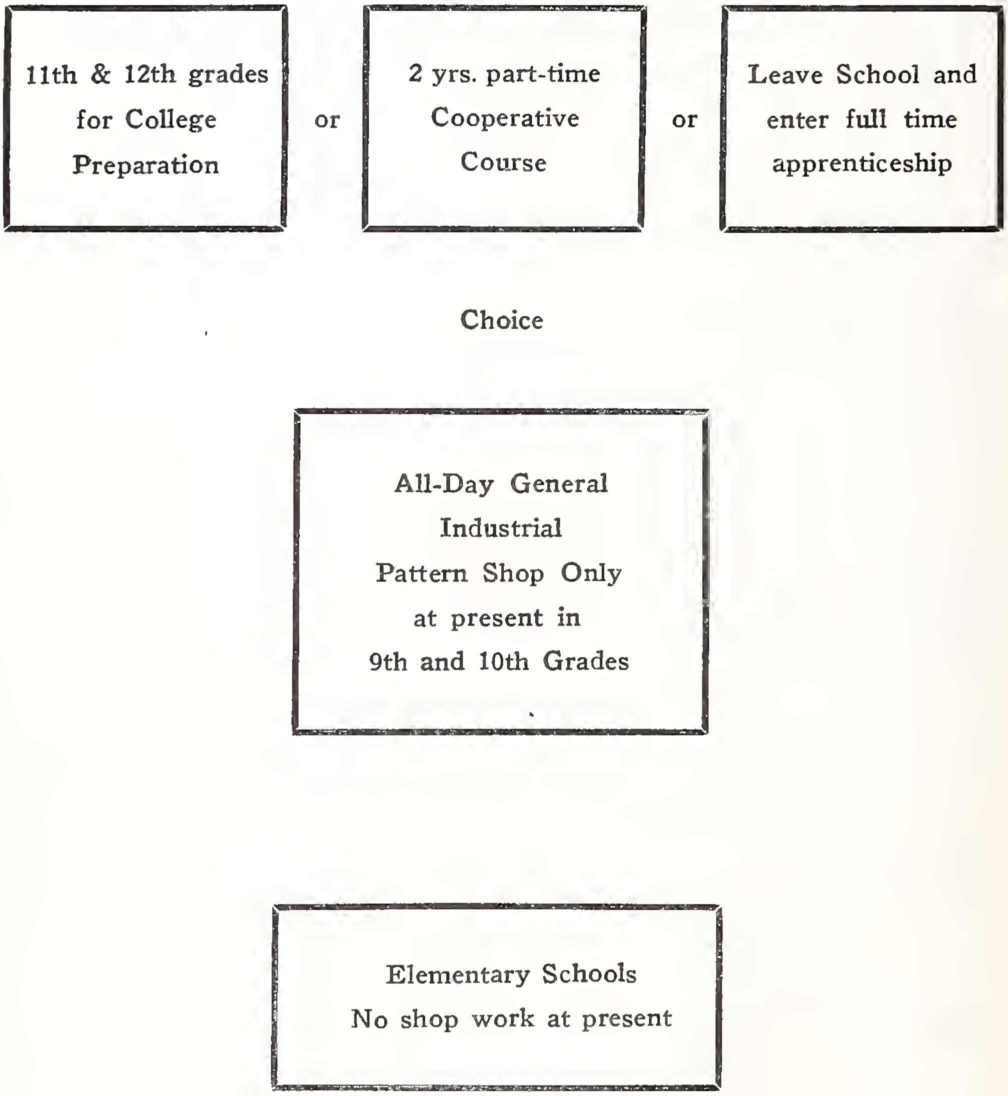

11th & 12th grades for College Preparation
or
2 yrs. part-time Cooperative Course
or
Leave School and enter full time apprenticeship
Choice
All-Day General Industrial Pattern Shop Only at present in 9th and 10th Grades
Elementary Schools No shop work at present

Diagram 1. Showing the curriculum.
(Compare with Diagram 2)

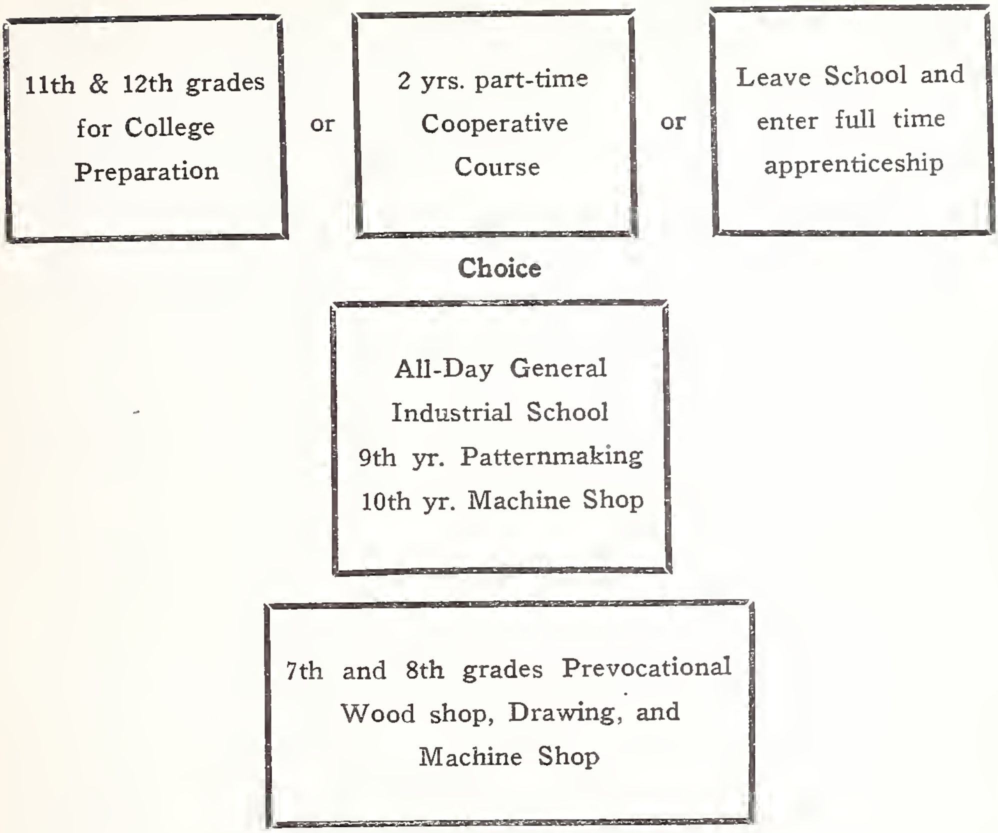

11th & 12th grades for College Preparation
or
2 yrs. part-time Cooperative Course
or
Leave School and enter full time apprenticeship
Choice
All-Day General Industrial School
9th yr. Patternmaking
10th yr. Machine Shop
7th and 8th grades Prevocational
Wood shop, Drawing, and Machine Shop

Diagram 2. Showing the expanded curriculum.

COOPERATIVE EDUCATION FOR A CITY OF OVER 25,000 POPULATION

In order to show how the cooperative course fits into a high school program in cities of over 25,000 population when all-day unit trade courses are being given, the following course of study from Chester, Pennsylvania, is illustrative:

INDUSTRIAL COURSE

(Based on 45-minute periods)

Chester, Pennsylvania

First Year (Unit Trade)

Trade Practice	Minutes per week	Related	Minutes per week	Non-vocational	Minutes per week
Shop Work	900	Elem. Trade Math.—		English —	
		Recitation	90	Recitation	180
		Supervised Study ...	45	Supervised Study ...	90
		Trade Drawing	225	Music	45
		Occupational Hygiene .	45	Public Speaking	45
		Trade Theory—			
		Recitation	90		
		Supervised Study ...	45		
Total	900	Total	540	Total	360

INDUSTRIAL COURSE (Continued)

Second Year (Unit Trade)

Trade Practice	Minutes per week	Related	Minutes per week	Non-vocational	Minutes per week
				English —	
Shop Work	900	Elem. Trade Math.—		Recitation	180
		Recitation	90	Supervised Study	90
		Supervised Study	45	Music	45
		Trade Drawing	225	Public Speaking	45
		Allied Trade Study	45		
		Trade Science—			
		Recitation	90		
		Supervised Study	45		
Total	900	Total	540	Total	360

Third Year (Cooperative)

Related	Minutes per week	Non-vocational	Minutes per week
Advanced Trade Math.—		English—	
Recitation	90	Recitation	180
Supervised Study	45	Supervised Study	90
Trade Theory—		Mathematics—	
Recitation	90	Recitation	180
Supervised Study	45	Supervised Study	90
Trade Drawing	450	Science—	
		Recitation	135
		Laboratory	90
		Supervised Study	90
		Civics—	
		Recitation	135
		Supervised Study	45
		Music	45
Total	720	Total	1080

Fourth Year (Cooperative)

Related	Minutes per week	Non-vocational	Minutes per week
Advanced Trade Math.—			
Recitation	90	English—	
Supervised Study	45	Recitation	180
Trade Theory—		Supervised Study	90
Recitation	90	Mathematics—	
Supervised Study	45	Recitation	180
Trade Drawing	450	Supervised Study	90
		Science—	
		Recitation	135
		Laboratory	90
		Supervised Study	90
		History—	
		Recitation	135
		Supervised Study	45
		Music	45
Total	720	Total	1080

LENGTH OF COURSES OF STUDY

All part-time cooperative courses must provide at least 144 clock hours of school instruction per year, and not more than 780 clock hours per year.

Learners between fourteen and sixteen years of age must devote at least eight hours per week to school instruction for as many weeks as schools are in session.

Learners over sixteen years of age are required to devote at least four hours per week to school instruction for as many weeks as schools are in session if they pursue a part-time cooperative industrial course.

SLACK SEASON COURSES

A modified form of the part-time cooperative plan is found in the arrangement providing for slack-season instruction. There are a number of trades and industries that have rather clearly defined slack seasons. Such slack seasons are characteristic of such trades as bricklaying, house carpentry, and house painting. They are also met in industrial work such as in the manufacture of clothing, millinery, textiles, shoes, and a variety of other products ranging in size from toys to ships.

An extension of present educational facilities needs to be made in the way of providing opportunities for trade and industrial education to youths and adults through slack-season courses. For example, classes may be conducted six or eight hours per day, five days per week, during December, January, and February for apprenticed plumbers, steam fitters, electricians, and carpenters. The courses of instruction should be organized on a short-unit basis.

THE SHORT-UNIT COURSE AS APPLIED TO PART TIME COOPERATIVE INDUSTRIAL EDUCATION

Short-unit courses are peculiarly well suited to instruction organized as a part of part-time cooperative courses. Whether such instruction is given on the week-about plan, or the two-week-about plan, or on the slack-season plan, in every case there is need for covering certain definite units of instruction while the learner attends classes, so that such subject matter will be remembered, and will be of service in the practice of the trade that follows the class-room instruction. For the sake of personal safety of pupil-apprentices, and for economic reasons, it may be advisable to teach a certain amount of general principles of the trade prior to doing certain shop or laboratory work involving their application. If the instruction is organized on a short-unit basis there is a maximum probability that these principles will have rather immediate application, and consequently are likely to be more interesting and will be more apt to be remembered than if their application would take place six months or several years hence.

The short-unit courses are also desirable because they tend to economize time for the learners through the omission of unnecessary subject matter, or of facts having value but not for the purposes at hand. A sheet metal worker for instance may wish to know how to read working drawings, and how to make lay-outs for intersecting pipes or a four-piece elbow, but he does not need to spend a lot of time becoming proficient in lettering, and in inking in drawings unless he expects to follow sheet metal drafting or some other form of drafting as a profession.

Since the sequence of cooperative shop work is based to some extent on production requirements, it is desirable to have flexibility in organization of related subject matter. Short-unit courses lend themselves well to such flexibility in that they make possible varied sequence and grouping of subject matter. It is possible, therefore, to give instruction for which the learners have an evident need, and for which they have a background of previous experience.

PLANNING COURSES OF STUDY

All courses of study have certain common requirements. It is not the present purpose to go into a discussion of principles that are general to all educational courses; but it is significant to note that courses of industrial education must dovetail with conditions obtaining in industry. In other words, while courses in language or arithmetic, for example, may be pretty well standardized, trade and industrial courses, and particularly part-time cooperative courses, must reflect the peculiar and constantly changing needs of industry. Therefore, such courses may not be the same, from place to place, or even in the same town, except in broad fundamentals.

The most vital, energizing, and dynamic courses that can be evolved will be such as are worked out by the instructors themselves—by the men and women who are masters of their trade, who understand the requirements of those trades in their own communities and who can interpret them in terms of educational requirements. To be sure, they will want to work with their local educational supervisors or directors and with the coordinators in order to make sure that these courses may fit into the general local, as well as into the State plan of education. Teachers should thoroughly analyze and organize their instruction. If they are held largely responsible for the organization of the courses they teach they will find such effort to be of great value toward happy and successful teaching experiences. Conferences among teachers for the purpose of evolving suitable courses of study are commendable. Special committees may be appointed to formulate and present findings.

SPECIAL METHODS OF TEACHING

Part-time cooperative industrial education that aims to develop socialized individuals through vocational participation will need to keep in mind fundamental educatonal considerations as well as trade and industrial requirements. Instruction, irrespective of whether it is given in school or in industry, and whether it is for electricians, for acetylene welders, for ship fitters, for machinists or for those in still other trades or vocations, should be given in such a way as to

1. Impart trade skills and technical knowledge.
2. Develop in pupils initiative and the power to think independently.
3. Guide pupils so that their thoughts and acts are truly social and not narrowly selfish.
4. Develop the spirit of cooperation.
5. Lead pupils to have the problem-solving attitude.
6. To develop appreciation for honest physical work.

The project method is a special method of instruction that may sometimes be adapted to the realization of these aims. It is a desirable one in part-time cooperative education because a method is needed that will favor ready correlation between the practice of the trade and related subjects such as mathematics, drawing, and science. This correlation may be furthered by:

1. Basing courses of study as largely as possible on the learner's previous experience in the trade and elsewhere.
2. Showing the learner how a knowledge of the related subjects is essential to the mastery of his vocation.
3. Teaching related subject matter as near as possible to the time when it is needed for the mastery of the trade.

The project method is also desirable for the following reasons:

1. It offers opportunity for individual purposing and planning.
2. It enlists, at the outset, the pupil's interest in the thing to be done, or act to be performed.
3. It gives opportunity for, and in many cases requires cooperation; it involves the opposite of the "stay at your bench and do as you are told" method.

4. The method is pedagogically superior to the exercise method of shop instruction in that the psychological rather than the so-called logical order (as conceived by trained adult minds), is followed.

5. It empasizes immediate as distinguished from deferred values. To put it tersely, it involves a minimum of "cold storage" process.

The project method as it applies to cooperative industrial education requires that the pupil-apprentice, under guidance, be given opportunities to think through, to analyze, organize, and execute typical work of the trade, which is within his capacity to execute. For example, a pupil-apprentice in carpentry may be asked to draw the plan, write specifications, and estimate the cost of constructing a private garage that his employer expects to have erected. The owner or the contractor naturally has certain wishes as to proportion, character of material, or similar requirements in regard to which the pupil-apprentice is informed. With this as a basis he can work up a design as a part of his drafting room practice, the estimating involved can be done as a part of his related mathematics work, and related science may be brought to bear on problems involving proportioning of footings, water-proofing, drainage, and in specifying building materials and supplies. In working out a project such as this one, more or less initiative and cooperation with others is required. Work of this kind may therefore be so presented as to involve rather definite training looking toward the development of initiative and toward the growth of desirable social and civic conduct as a part of part-time cooperative education.

THE COOPERATIVE AGREEMENT

If employers are to take a personal and permanent interest in young workers, they must be in a position to feel that the latter are more than transient employees; they must be able to feel that these young persons plan to learn their vocation in its entirety and that they will stay with the company for some time. Similarly forward-looking pupil-apprentices should make sure that they will be given first-class trade or industrial training if they enter an apprenticeship. In order to promote clearness of understanding, and in order that there may be an accurate record of such understandings, it is desirable that written agreements be entered into between the interested parties; namely, the firm or employer, the pupil-apprentice and his parent or guardian, and the public school involved.

Such written agreements should contain only such conditions as are mutually satisfactory to the contracting parties, and the conditions must be absolutely fair to each and all parties to the agreement. If they are not, they will only prove a source of trouble. It is fundamental, therefore, that the spirit as well as the letter of the cooperative agreements be adhered to by every one concerned. A few examples of agreements now in use are given in Appendix C.

THE COORDINATOR

The success or failure of part-time cooperative instruction depends to a large extent upon the coordinator. He is the person who dovetails shop practice and industrial needs; he supervises the pupil-apprentices at work as closely as circumstances may require. In the industrial establishment he is the authorized agent of the Board of Education. As such he helps to clear up and to eliminate misunderstandings between pupils and their foremen or supervisors representing the employer.

Since the coordinator's function is to effect direct coordination between the productive vocational work of the shop and the related subjects taught in the school, he can and should be of great assistance to the teachers of these related subjects in helping them to organize desirable material for classroom and laboratory instruction.

As a representative of the schools, it is up to him to see that pupils are given progressive work and an all-round knowledge of their trade or calling. This requires tact and patience, for there are major and minor foremen and supervisors who look upon their work almost entirely as a production job and who must be shown the advantages of giving floor space and time to an instruction-production program for certain of their workers.

The coördinator is one whose experience and training should be such as to make him peculiarly valuable as a vocational counselor to the pupils who come under his supervision. He is in a position to know what the pupils are doing in school, and how they are getting along in their work in the industrial establishments. When desirable, this information can be reinforced by visits to the homes of pupils; the fact that the coordinator knows the requirements of the vocations from firsthand experience is conducive to confidence and trust on the part of pupils seeking counsel. No change of courses or of jobs by cooperative pupil-apprentices should be effected without the consent of the coordinator.

One or more full-time coordinators may be employed, and the salary may be paid in part by the State Department of Public Instruction, when there are enough pupils enrolled to justify it. In case the number of pupils is small, the coordinating may be done by the industrial teachers, or by the supervisor or director of industrial education in the community.

PART-TIME COOPERATIVE TRADE ADVISORY COMMITTEES

If advisory committees are properly chosen, there is every indication that they should be of much assistance. Their function should be as follows:

1. To act in an advisory capacity in matters pertaining to trade and industrial education.
2. To champion in the community the cause of industrial education in general and part-time cooperative industrial education in particular.
3. To give publicity in every way possible to what is being done, and what should be done in industrial education in general, and in part-time cooperative industrial education in particular in the community.
4. To promote cooperation between the school and industry.

For purposes of cooperative industrial education, advisory committees may be made up of representatives of the cooperating firms. Each firm, for example, may appoint one representative on the committee. The latter may meet, subject to the call of the Superintendent of Schools or his representative, as often as circumstances may warrant.

SUPERVISION OF INSTRUCTION

Much progress is being realized, and more can be attained by giving greater attention to helpful, constructive supervision of industrial instruction. This is true in schools as well as in industrial plants. There is no greater single means of improving industrial instruction than that which may be brought about by the right kind of supervision of instruction.

Foreman training, and foreman-instructor training, is very significant to the whole plan of industrial education. It is vital to part-time cooperative industrial education because we need foremen who are alive to the service they may render workers, employers, and society at large by means of giving instruction either personally or through others, and by providing progressive employment to capable, ambitious workers upon whose shoulders more and more responsibility may be placed as they develop.

Foreman training given in the form of conferences to which foremen are called, has large possibilities in the way of affording opportunity to the public schools to show that they can render valuable assistance to industry. Foremen who have attended such conferences are likely to show greater interest and cooperation than they otherwise would toward any plan of part-time or full-time industrial instruction that may be set up in their plants.

EDUCATIONAL AND VOCATIONAL GUIDANCE

No plan of industrial education is complete if it does not involve educational and vocational guidance. In order to minimize the huge human waste that results from the lack of information about the capacities, interests, and ambitions of learners and of the equally signficant facts concerning educational and vocational opportunities and conditions, we need to put into practice far-reaching plans of guidance for youth as well as for adults. It is especially important to provide such service to adolescent boys and girls in and out of school. Guidance before and during the early years of employment may do much to shape life careers.

QUALIFICATIONS OF TEACHERS

The qualifications for teachers of part-time cooperative education are given herewith. Further information may be secured by writing to the Teacher Bureau, State Department of Public Instruction.

1. *Director in Charge of Industrial Schools or Department.* He shall be a graduate from a State training school or an approved technical or trade school and have had at least one year of practical experience in a trade, or its equivalent. He shall have had at least eight units of approved training in professional subjects which contribute to his efficiency as a teacher or director of industrial education. The term "unit" in this connection means one 50-minute period per week of work of college grade, for a year of at least 36 weeks. He shall hold a State certificate entitling him to serve as director of an industrial school or department.

The following will also be accepted:

Graduation from high school, four years' successful experience at his trade beyond the apprenticeship period, at least two years' successful teaching experience and at least eight college units of approved training in professional subjects which will add to his efficiency as a director of industrial education. He must have a state certificate to direct industrial courses.

2. *Shop or Trade Teacher.* He shall have learned his trade either as a shop apprentice, or otherwise secured all-round training in his trade or vocation and shall possess special fitness for any and all phases of the trade he may wish to teach. He shall have worked at least six years or its equivalent at his trade; not less than two years of which shall be of journeyman grade or its equivalent. He

---

Note: The above qualifications are the lowest that are recognized. The State Departent of Public Instruction favors higher qualifications. In some trades instructors should have ten years of practical experience, as a basis for effective trade teaching on a vocational basis.

shall have a minimum general education equivalent to the completion of the eighth grade school and have satisfactorily completed 240 hours of work equivalent to that offered by a State Teacher Training Course for shop teachers. He must hold the proper State certificate.

3. *Related Subject Teacher.* In general, every related subject teacher must have at least a high school education or its equivalent, and have completed 240 hours of work equivalent to that offered by a State Teacher Training Course for related subject teachers, and must have an intimate knowledge of the subject or subjects which he is required to teach, as well as a satisfactory contact with the trades to which the subject matter is related. He must hold the proper State certificate.

4. *Teacher of Non-vocational Subjects.* Every teacher of non-vocational subjects must possess the same qualifications as a high school teacher in the Commonwealth of Pennsylvania, if the industrial course is of high school grade. In the case of an elementary industrial course. the minimum qualifications will be the same as those required to teach in the Continuation Schools of Pennsylvania.

CERTIFICATION OF TEACHERS

Detailed information relative to the certification of teachers may be obtained from the Teacher Bureau, State Department of Public Instruction.

COST OF INSTRUCTION

Under normal conditions the cost per pupil per year to school districts for part-time cooperative instruction should be less than what all-day unit trade instruction costs. This is largely due to the fact that over half of the pupil-apprentice's time is spent in industry where, under the cooperative plan, employers provide shop equipment and supplies. The cost of instruction in Pennsylvania ranges between $100 and $140 per pupil. See Appendix A for State aid for vocational education.

If interest on the investment and depreciation of plant and equipment were figured in the cost of instruction, the result would show up still more favorably for part-time trade-extension instruction.

STATE AND FEDERAL AID

For a more complete discussion of State and Federal financial aid see the Vocational Act of 1925 as given in Appendix A of this bulletin.

State and Federal aid may not be used for equipment, supplies and furnishings.

WHERE IT IS BEING GIVEN

Part-time cooperative industrial education is being conducted in the Commonwealth of Pennsylvania in the following school districts during the year ending June 30, 1925:

Abington
Chester
Jeannette
Johnstown
Lock Haven
Philadelphia
Waynesboro
Williamsport
York

APPENDIX A

THE VOCATIONAL EDUCATION ACT OF 1925

Section 1. That the following words and phrases as used in this act shall, unless a different meaning is plainly required by the context, have the following meaning:

"Vocational Education" shall mean any form of education, of less than college grade, given in school or elsewhere, the purpose of which is to fit an individual to pursue effectively a recognized profitable employment, whether pursued for wages or otherwise.

"Vocational Industrial Education" shall mean those forms of vocational education that fit for industrial pursuits. It includes occupational training for women and girls other than training for the vocation of home-making.

"Vocational Agricultural Education" shall mean that form of vocational education which fits for the occupations connected with the tillage of the soil, the care of domestic animals, forestry and other wage-earning or productive work on the farm.

"Vocational Commercial Education" includes those forms of vocational education, the direct purpose of each of which is to fit for some recognized commercial calling.

"Vocational Home Economics Education" shall mean that form of vocational education which has for its controlling purpose the preparation of girls and women for useful employment as house daughters and home makers engaged in the occupations and the management of the home.

"Vocational industrial, vocational agricultural, or vocational home economics school or department," or "vocational school or department" shall mean a distinctive organization of courses, pupils, and teachers approved by the State Council of Education, designed to give either vocational industrial, vocational agricultural, or vocational home economics education, as herein defined.

"Vocational evening class," shall mean a class giving such training as can be taken by persons already employed during the working day, and which, must in its instruction, deal with the subject-matter of, and be so carried on as to relate to, the day employment.

"Vocational Evening Class," in vocational home economics shall mean a class giving training in home making to girls or women, over fourteen years of age, however they may be employed or engaged during the day.

"General Continuation School or Class" as used in this act refers to that group of employed minors between fourteen and sixteen years of age who are required under the provisions of the Child Labor Act to attend school for eight hours each week.

"Vocational Home Economics school or department" shall mean a vocational school or department designed to develop, on a vocational basis, the capacity for useful employment as house daughters and home makers in the occupations and the management of the home.

"Part-Time Co-operative vocational education" refers to that form of vocational instruction that involves alternate attendance upon school and work at the vocation given in accordance with an agreement by which the school and industry co-operate and co-ordinate in making available the combined educational and training facilities of both.

"Practical—The term "practical" as used in the act to which this is an amendment refers to the manipulative or "practice of the trade" aspects of a vocation. It includes such work given in shops, laboratories, mines, drafting rooms, and other places and is used to distinguish such work from "academic" or "non-vocational" education.

Section 2. The State Council of Education is hereby authorized and directed to investigate, and to aid in the introduction of, vocational industrial, vocational agricultural, and vocational home economics education; to assist in the establishment of schools and departments for the aforesaid forms of education and to inspect and approve such schools or departments as are hereinafter provided. The State Council of Education shall make a report annually to the Governor and Legislature describing the condition and progress of vocational industrial, vocational agricultural and vocational home economics education during the year, and shall also make such recommendations as the Council may deem advisable.

The State Superintendent of Public Instruction shall be the executive officer of the State Council of Education for the administration of this act. He shall appoint, from time to time, with the approval of the State Council of Education, such expert assistants, other than those already provided for by law, as may be necessary in vocational industrial, vocational home economics, vocational agricultural or vocational commercial education, and all clerical and other agents necessary in carrying out the provisions of this act.

Section 3. In order that instruction in the principles and the practice of arts may go on together, vocational industrial, vocational agricultural, and vocational home economics schools or departments may offer instruction in day, part-time, and evening classes. Attendance upon such day, evening, or part-time classes shall be restricted to those over fourteen years of age.

Section 4. Any school district may, through its board of school directors, establish and maintain vocational industrial, vocational agricultural, vocational home economics and vocational commercial schools or departments.

Section 5. Two or more districts may, as provided in article eighteen, section one thousand eight hundred and one to one thousand eight hundred and eight, inclusive, of the School Laws of Pennsylvania of one thousand nine hundred eleven, entitled "An act to establish a public school system in the Commonwealth of Pennsylvania, together with provisions by which it shall be administered, and prescribing penalties for the violation thereof; providing revenue to establish and maintain the same, and the method of collecting such revenue; and repealing all laws, general, special or local, or any parts thereof, that are or may be inconsistent therewith," through a joint school committee, establish and maintain vocational industrial, vocational agricultural, vocational home economics, or vocational commercial schools or departments, to be known as joint vocational schools or departments.

Section 6. Local school boards and joint school committees administering approved vocational industrial, vocational agricultural, vocational home economics or vocational commercial schools or departments, may, under a plan to be approved by the State Council of Education, appoint an advisory committee composed of members representing local trades, industries, and occupations. It shall be the duty of such committee to counsel with and advise the local or joint board of trustees; and other school officials, having the management and supervision of such schools.

Section 7. Any resident of any school district in Pennsylvania which does not maintain an approved vocational industrial, vocational agricultural, vocational home economics or vocational commercial education school or department, offering the type of training which he desires, may make application to the school board of any other district for admission to such school or department maintained by said board. In case said board refuses him admission, he may apply to the State Council of Education for admission to such school or department. The State Council of Education—decision of which shall be final—may approve or disapprove such application. In making such decision the State Council of Education shall take into consideration the opportunities for free vocational training in the community in which the applicant resides, the financial status of the community, the age, sex, preparation, aptitude, and previous record of the applicant, and all other relevant circumstances.

The school district in which the person resides, who has been admitted, as above provided, to an approved vocational industrial, vocational agricultural, vocational home economics or vocational commercial school or department maintained by another school district, shall pay a tuition fee, to be determined after the same manner provided for the high schools in article seventeen, section one thousand seven hundred and eleven, of the School Laws of Pennsylvania, for one thousand nine hundred and eleven, entitled "An act to establish a public school system in the Commonwealth of Pennsylvania, together with the provisions by which it shall be administered, and prescribing penalties for the violation thereof, providing revenue to establish and maintain the same, and the method of collecting such revenue; and repealing all laws, general, special or local, or any parts thereof, that are or may be inconsistent therewith." If any school district neglects or refuses to pay for such tuition it shall be liable therefor, in an action of contract, to the school district or school districts maintaining the school which the pupil, with the approval of the board, attended.

Section 8. Vocational industrial, vocational agricultural, and vocational home economics schools or departments shall so long as they are approved by the State Council of Education as to organization, control, location, equipment, courses of study, qualifications of teachers, methods of instruction, conditions of admission, employment of pupils, and expenditures of money, constitute approved local or joint vocational schools. School districts maintaining such approved local or joint vocational schools or departments shall receive reimbursement as hereinafter provided.

Section 9. The Commonwealth, in order to aid in the maintenance of the approved local or joint vocational industrial, vocational home economics and vocational agricultural schools or departments, shall as provided in this act, pay annually from the treasury to school districts and unions of school districts maintaining such schools or departments by order on the State Treasurer signed by the Superintendent of Public Instruction, from funds appropriated by the legislature for that purpose or otherwise available, and in addition to the amounts paid to such school districts under the provisions of section one thousand two hundred and ten of an act approved the eighteenth day of May, one thousand nine hundred and eleven, (Pamphlet Laws, three hundred and nine), entitled "An act to establish a public school system in the Commonwealth of Pennsylvania, together with the provisions by which it shall be administered, and prescribing penalties for the violation thereof; providing revenue to establish and maintain the same, and the method of collecting such revenue; and repealing all laws, general, special or local, or any parts thereof, that are or may be inconsistent therewith," as amended amounts computed in accordance with the following schedules:

Districts of the first class—The Commonwealth shall reimburse as hereinafter provided, districts of the first class to the extent of twenty-five per centum (25%) of the sum expended for salaries during the previous school year by such district or unions of districts for approved instruction in practical and related technical subjects in day vocational schools or departments, and for approved instruction in practical, related technical and academic subjects in part-time co-operative schools or departments.

Districts of the second, third, and fourth classes,—The Commonwealth shall reimburse as hereinafter provided, districts of the second, third, and fourth classes which have a true valuation per teacher of assessable property exceeding two hundred thousand dollars ($200,000) to the extent of forty per centum (40%) of the sum expended for salaries during the previous school year by such district or unions of districts for approved instruction in practical and related technical subjects in vocational schools or departments, and for approved instruction in practical, related technical and academic subjects in part-time co-operative schools or departments, and that the amount paid to a school district in any of the foregoing classes, which has a true valuation per teacher of more than one hundred thousand dollars ($100,000) and not more than two hundred thousand dollars ($200,000) shall be forty-five per centum (45%) of the sum expended for salaries during the previous school year by such district or unions of districts for approved instruction in practical and related technical subjects in day vocational school or departments and for approved instruction in practical, related technical and academic subjects in part-time co-operative schools or departments; and that the amount paid to a district in any of the foregoing classes, which has a true valuation per teacher of assessable property more than fifty thousand dollars, ($50,000) and not more than one hundred thousand dollars ($100,000) shall be fifty per centum (50%) of the sum expended for salaries during the previous school year by such district or unions of districts for approved instruction in practical and related technical subjects in day vocational schools or departments, and for approved instruction in practical, related technical and academic subjects in part-time co-operative schools or departments; and the amount paid to a school district in any of the foregoing classes which has a valuation per teacher of assessable property of fifty thousand dollars ($50,000) or less shall receive fifty-five per centum (55%) of the sum expended for salaries during the previous school year by such district or unions of districts for approved instruction in practical and related technical subjects in day vocational school or departments and for approved instruction in practical, related technical and academic subjects in part-time cooperative schools or departments. Provided, That districts of the fourth class shall be reimbursed to the extent of twenty per centum (20%) of the sum expended for salaries during the previous school year by such district or unions of districts for approved instruction in academic subjects in approved rural community vocational schools. Provided further, That no district shall receive a reimbursement of more than eighty per centum (80%) of any one teacher's salary from either Federal or State funds or from both.

The Commonwealth in order to aid in the maintenance of approved local or joint evening vocational industrial, vocational home economics and vocational agricultural schools or departments, or part-time Vocational Courses, shall pay, as provided in this act, as amended annually from the treasury to school districts and unions of school districts maintaining such evening schools or departments in the several classes of districts an amount equal to two-thirds the sum which was expended for salaries of part-time and evening school teachers and supervisors during the previous school year by such a school district or unions of districts for approved instruction in practical and related technical subjects.

Whenever two or more fourth class districts unite by joint agreement approved by the Department of Public Instruction for the purpose of providing and maintaining approved vocational instruction as a part of the school program, the Commonwealth shall, as provided in this Act, pay annually from the treasury to such unions of school districts the sum of five hundred dollars ($500) so long as such joint agreement is in effect.

The Commonwealth in order to aid in the maintenance of approved local or joint compulsory general Continuation Schools for minors, fourteen to sixteen years of age shall pay as provided in this Act annually from the treasury to school districts and unions of school districts maintaining such schools twenty per centum (20%) of the sum expended for salaries during the previous school year by the district or unions of school districts for approved instruction required by law. Provided further, That the Commonwealth shall reimburse districts or unions of districts to the extent of forty per centum (40%) of the sum expended during the previous school year for salaries paid teachers of General Continuation Schools, who were employed on a part-time basis.

Section 10. On or before the first Wednesday of January of any year in which the regular session of the Legislature is held, the State Council of Education shall present to the Legislature an estimate of the amount of money necessary to meet the expenditures to be incurred in the administration of this act for the two school years beginning with the first day of the ensuing July; and of the amount necessary to meet the claims of school districts and unions of school districts maintaining approved vocational schools or departments, under the provisions of this act for the two school years beginning with the first day of the ensuing July. On the basis of such a statement the Legislature shall make an appropriation of such amounts as may be necessary to meet the expense of carrying this act into effect, and of reimbursing such school districts and unions of school districts for such school years, as herein provided.

Section 11. On or before the tenth day of July of each year the school authorities of each district shall present to the State Superintendent of Public Instruction a statement of the amount expended during the school year, previous to such first day of July, for instruction in approved local or joint vocational industrial, vocational home economics, continuation schools or vocational agricultural schools or departments, as herein provided. On the basis of such a statement, the State Superintendent of Public Instruction shall, by requisition upon the State Treasurer, pay such school districts and joint school districts such reimbursement for the previous school year as is provided for in this act.—Act, of 1925, P. L. 418.

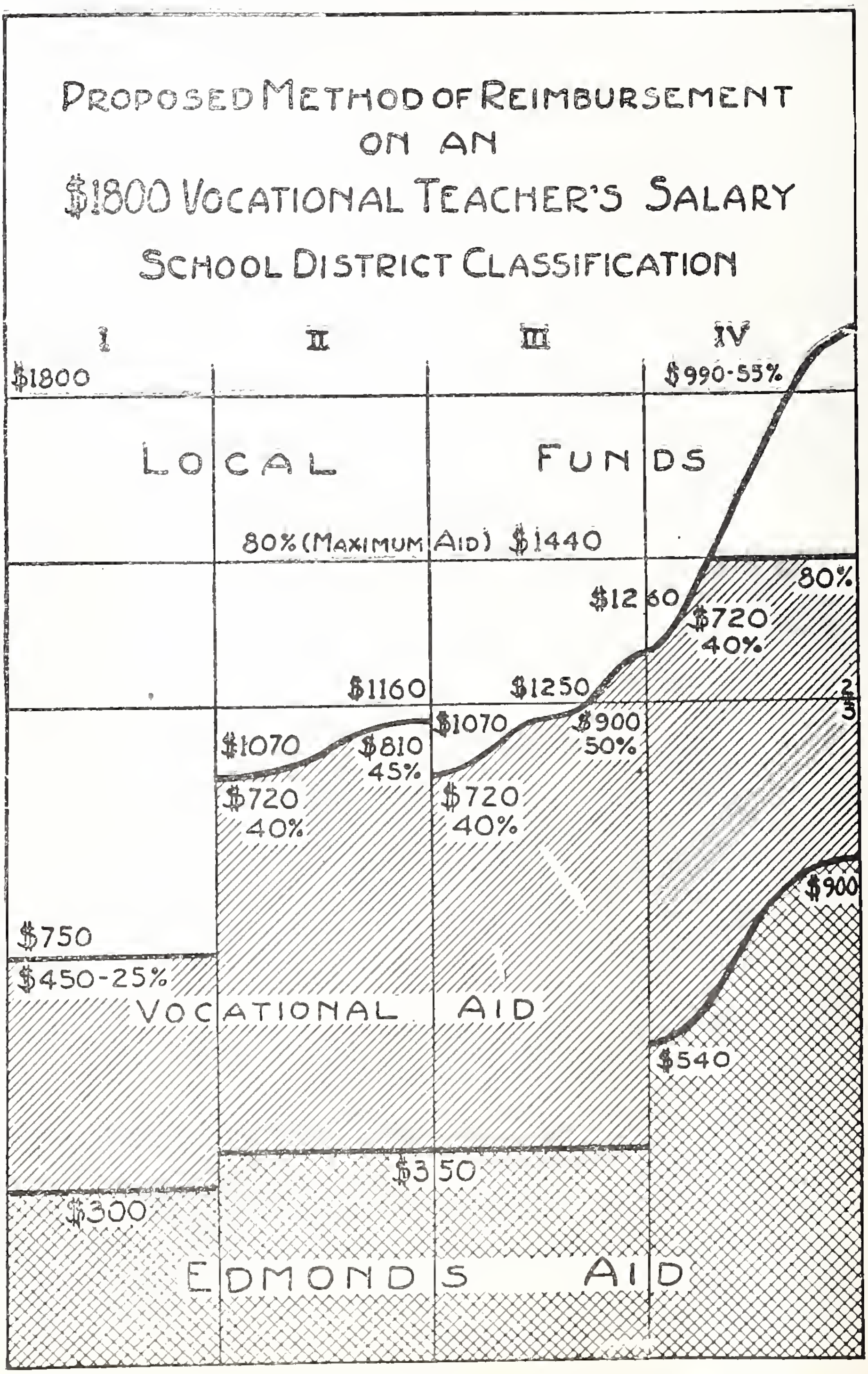
PERCENTAGE OF VOCATIONAL AID, UNDER ACT OF 1925, ON BASIS OF TRUE VALUATION PER TEACHER

Valuation Per Teacher	Classification of School Districts			
	I	II	III	IV
50				55%
50-100			50%	50%
100-200		45%	45%	45%
200-UP	25%	40%	40%	40%

Note.—Information regarding the effect of this legislation and percentage of Vocational aid to a particular local school district may be obtained by addressing the Department of Public Instruction, Harrisburg, Pa.

EXPLANATION OF GRAPH

The graph 2 on page 44 shows clearly how State aid for the reimbursement of a vocational teachers' salary of $1800 would be given first, second, third and fourth class districts respectively. It shows that a local district of the first class would receive reimbursement



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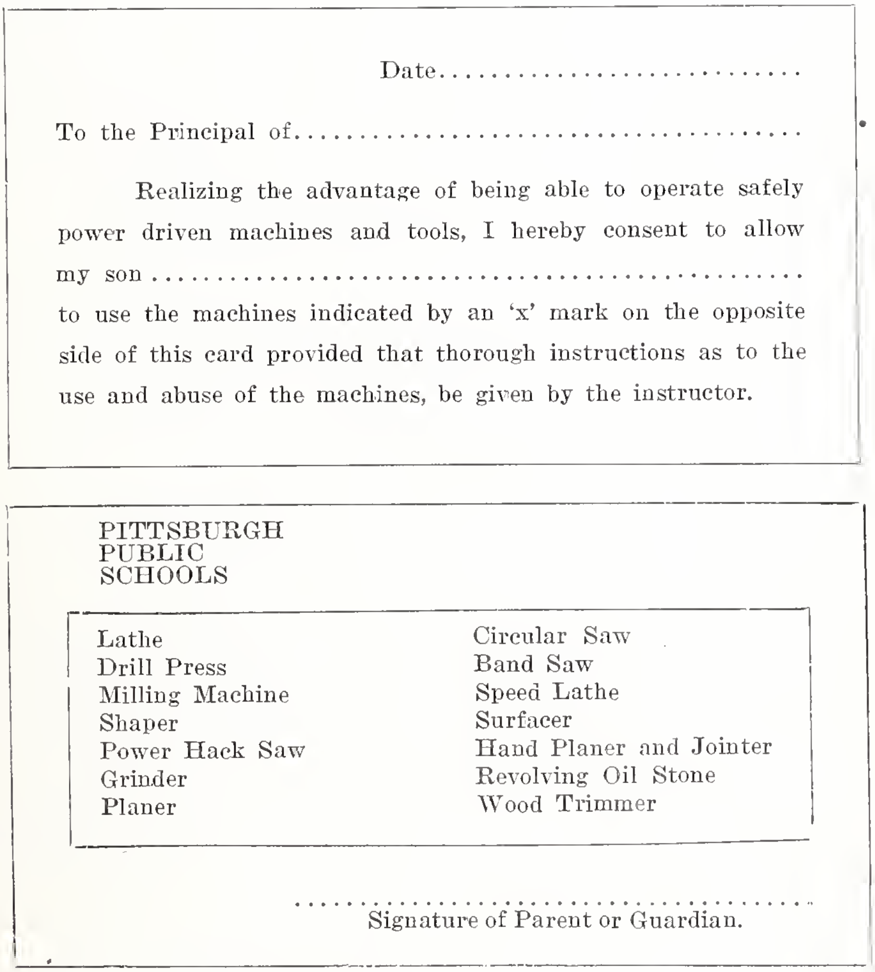
[1] Prepared by P. L. Cressman, Secretary, Committee on **Reimbursement appointed by** the Pennsylvania Society for Vocational Education.

on such a salary to the amount of $300 from the Edmonds fund. It will be observed that the same total of $750 aid is considerably less than the two-thirds or $1200 which would have been received by this district according to the old legislation. There is, however, no limit of $5000 State aid and $5000 Federal aid to any one district provided in this new Act. The only limitation is that no district shall receive more than 80% aid of a teacher's salary from combined State and Federal funds, which based on the $1800 salary amounts to $1440.



Date............................

To the Principal of.......................................

Realizing the advantage of being able to operate safely power driven machines and tools, I hereby consent to allow my son ....
to use the machines indicated by an 'x' mark on the opposite side of this card provided that thorough instructions as to the use and abuse of the machines, be given by the instructor.

PITTSBURGH
PUBLIC
SCHOOLS

Lathe
Drill Press
Milling Machine
Shaper
Power Hack Saw
Grinder
Planer

Circular Saw
Band Saw
Speed Lathe
Surfacer
Hand Planer and Jointer
Revolving Oil Stone
Wood Trimmer

....
Signature of Parent or Guardian.

Showing front and back of a card used by the Pittsburgh Public Schools. It is used in order to make sure that the parents are willing to have boys use power driven machinery. Such a card helps to impress upon the boy the need for care in working with such machines.

RULINGS AND DECISIONS

Ruling on Responsibility for Injury in School Shops

The Workmen's Compensation Act provides that compensation is due only where the relation of employer and employee exists. Consequently there is no liability under the Workmen's Compensation Act, on the part of school districts for injuries to pupils injured while making objects in school shops.

All school districts should take every possible precaution to prevent injury to pupils. The written consent of parents should be secured before pupils are permitted to operate machines.

Ruling Concerning Part-time Cooperative Pupils in All-Day Unit Trade Classes

Where local conditions are such that the number of cooperative part-time pupils is insufficient to form a separate class, it may be advisable to admit them to the classes in the all-day school as a temporary expedient. This practice is not approved as a general policy because lack of efficiency on the part of either group or of both is likely to result.

Ruling Concerning Approval of Courses of Study

Courses of study for which State or Federeal aid is desired must be approved in writing by the Department of Public Instruction. Contemplated changes should be brought to the attention of this Department and should be approved before they are undertaken.

Ruling Concerning Operation of Power Driven Machinery

The following is a ruling of the Industrial Board, of the Department of Labor and Industry:

> "Rule M-1. That minors under eighteen years of age learning the operation of power driven machinery, under proper supervision in industrial schools, are not pursuing an occupation forbidden by the Child Labor Act. Adopted February 15, 1916."

This ruling has been interpreted to apply to part-time cooperative pupils learning the operation of power driven machinery, under proper supervision in industrial establishments. Owing, however, to the fact that there is a question regarding cases where this ruling may in some instances conflict with the provisions of the Child Labor Act, more specific legislation governing apprenticeship is under consideration.

APPENDIX B

RECORDS AND REPORTS

Adequate records are essential to good management in schools as well as in industrial plants. The records or report forms discussed here are suggestive of what has proved helpful in a number of industrial schools.

1. Time Cards. When pupil-apprentices alternate between school and industrial establishments, it will be desirable for both the employer and the school to have an accurate record of attendance. One way to solve this problem is by having a time clock in the school as well as in the industrial plant. Time cards may be made out in duplicate—one for the employer and one for the school. Some other record of attendance may be substituted if desired.

2. Pupil-history Cards. Records should be kept on file showing the personal history of pupil apprentices. Such items as name, address, age, parents, education, vocational experience, and special characteristics should be on such a record card. The card may be made so as to serve as a follow-up card for several years. Form 1 shows such a card as it is being used at York, Pennsylvania. Form 2 is used in Erie.

3. Individual Shop Record Cards. It is desirable to have records showing the actual amount of time that pupil-apprentices spend on various kinds of machines or at various processes. Such records are desirable because they may show at a glance the kind and the extent of the instruction given. Such records are helpful in that they provide a means of checking up on whether or not all-round instruction is being given to each individual.

An example of such a record is shown in Form 3. This record form is being used in the Springfield, Mass. Vocational School.

4. Class Records. The individual records showing the kind and extent of shop or trade experience that each pupil has had should be transferred to a master or class record card. This card will show at a glance the nature and extent of the experience each pupil has received.

5. Equipment Records. A record of school shop and laboratory equipment may be kept on cards. These may give data such as the following: manufacturer, dealer, date when acquired, cost, condition, date when scrapped.

One set may be on file in the shop. Whenever articles are scrapped, broken, or replaced such information is recorded at the time. If a duplicate set is kept in a fireproof vault little difficulty will be experienced in the settlement of insurance claims in case of loss by fire, and re-ordering in such case will be easy.

6. Stock, Maintenance and Production Records. These records will necessarily vary in the different industrial plants. It will be desirable to have pupil-apprentices make a study of various checking, routing, production, and cost accounting records that are used in various industries.

7. Employer's Report. The foreman's report should enter into the standings or grades given part-time cooperative pupils. Form 4 is used in York, Pennsylvania.

INDUSTRIAL CO-OPERATIVE COURSE

Name ____________ York High School, Pa. Class ____________

Year	Algebra	Arithmetic	Chemistry	Drawing	English	Phy. Geo.	Geometry	History	Mechanics	Physics	Shop Meth.	Shop Math.	Shop. Work	Spelling	Trigo'y				Average	Remarks
First																				
Second																				
Third																				
Fourth																				
Fifth																				

Full Name ________ Birth ________ Entered ________

Parent's full name ________

" address ________

" occupation ________

Graduation honors ________

Trade ________

Started Work ________

Learned trade at ________ Plant ________

Member of Industrial Society ________

Received Diploma ________

Personal Characteristics ________

____

____

____

Reverse side of Form 1.

62-Mc-5M-2-20

THE SCHOOL DISTRICT OF THE CITY OF ERIE, PA.

INDIVIDUAL INFORMATION BLANK

Parent's Record. Date....................

....

Student's name ....
(Family Name) (Given Name)

Address ....Telephone No...............

Parent's occupation ....

....

1. How much longer do you plan to send your child to school? ....
2. Can (he) (she) finish High School? ....
3. Is (he) (she) going to College? ....
4. For what occupation does (he) (she) desire to prepare? ....
5. What occupation do you desire to have (him) (her) enter? ....
   Why? ....
6. State any occupation in which (he) (she) has been employed ....
7. Is (his) (her) general health good? ....If not, why? ....
8. Does (he) (she) have at least eight hours sleep regularly? ....
   If not, why? ....
9. What are (his) (her) outside activities:
   (a) Social ....
   (b) Athletic ....Hours per week..........
   (c) Work ....Hours per week..........
   (d) Music ....Hours per week..........
   (e) Miscellaneous ....
10. Remarks: ....

....

....

11. Does student spend evenings at home ( ); club ( ); church ( ); movies ( ); streets ( )?

....
Parent.

Form 2.

EMPLOYER'S REPORT

—TO—

York Co-operative Industrial School

Note:--If the employing Superintendent or Foreman will briefly report on the following points, the school will be able to render greater service to both employer and boy.

"CO-OPERATION IS THE KEYNOTE OF SUCCESS"

Apprentice .... Employer ....

Month of ....

Foreman .... Machine Operated ....

1. Attitude toward work ....
2. Adaptability ....
3. Speed ....
4. Quality ....
5. Regularity ....
6. Remarks ....

Grades:-- Excellent 1, Good 2, Fair 3, Poor 4. Signed ....

The School Will Welcome Suggestions From Employers And Employees

Form 4.

APPENDIX C

A few typical apprenticeship agreements that are now in use in school districts of the Commonwealth are herewith given. It will be noticed that they have certain features in common and that they differ in other respects. They are included here for the assistance that they may give to those who wish to draw up agreements that will fit specific situations elsewhere. At this point it should be reemphasized that written agreements should contain only such conditions and requirements as are mutually satisfactory to all parties concerned in the matter.

I. Williamsport Public Schools

APPRENTICESHIP AGREEMENT

SECT. I—THE SCHOOL DISTRICT AGREES:

1. To send the Employer only those Apprentices it believes to be suited to the trade in question and who have completed in a satisfactory manner the first two years work of the Industrial Course of the Williamsport High School.
2. To arrange a school program for the Apprentice so that he may work in the shop and attend school in alternate periods of two weeks during the school term and to give to the Apprentice such training related to the trade as will enable him to progress satisfactorily.
3. To have its representative visit the Employer at regular intervals to learn what progress is being made by the Apprentice and what further school training should be given to him.
4. To give to the apprentice a High School diploma when he has successfully completed the four-year Industrial Course, and an Apprenticeship Certificate when he has successfully completed the work outlined in Sec. II, Par. 5, 6 and 7.

SECT. II—THE EMPLOYER AGREES:

1. To employ the Apprentice in alternate two week periods during the school year and continuously during the school vacation with the exception of a two week vacation without pay.
2. To teach the Apprentice as much of the trade as the equipment and personnel will permit.
3. To notify the Director of Vocational Education, Williamsport Public Schools, at the end of six weeks shop work if the Apprentice is not found suitable for the trade.

4. To submit to the Director of Vocational Education, Williamsport Public Schools, upon his request, a report on the progress of the Apprentice.

5. To pay the Apprentice at the following rates:

First period of approximately 650 hours shop work at —— cents per hour
Second " " " " " " " " ____ " " hour
Third " " " " " " " " ____ " " hour
Fourth " " " " " " " " ____ " " hour

6. To employ the Apprentice for one year after graduation from the Williamsport High School at the rate of pay to be mutually agreeable to the Employer and the Apprentice in order that he may secure the Certificate of Apprenticeship referred to in Sec. 1, Par. 4.

7. To give the Apprentice opportunity for the following training during his apprenticeship:

PRACTICAL WORK IN

....
....
....
....
....
....

8. The Employer reserves the right to suspend Apprentices entirely or in part, and also to decrease working hours whenever the status of business justifies it, at the discretion of the Employer. All hours lost either due to suspension or to decreased working hours shall or shall not be made up at the discretion of the Employer.

SECT. III—THE APPRENTICE AGREES:

1. To conform to the rules of the Employer and carry out directions to the best of his ability.

2. To make an honest effort to complete the training outlined in Sec. II.

3. To puchase from time to time such tools as may be required to do rapid and accurate work.

Approved and accepted:

.... (Apprentice)
.... (Parent or Guardian)
.... (Employer)
.... (For School District)

II CHESTER PUBLIC SCHOOLS

Department of Cooperative Industrial Education.

APPRENTICESHIP AGREEMENT

Part I.

This agreement made this ...... day of ...., 19 ...., between ...., doing business in ...., hereinafter known as "Company" and .... of .... hereinafter known as "Guardian," whose relationship to the apprentice is that of ...., witnesseth that said ...., a minor, over .... years of age, hereby becomes an apprentice to the Company and the Company hereby accepts him subject to the terms herein stated, to learn the trade of ...., subject to the terms herein stated.

The apprentice and his Guardian hereby promise that the apprentice shall conform to and abide by all the provisions of this agreement, and shall faithfully serve the Company during the full period of time named in this agreement. And the said, ..., as .... aforesaid, expressly agrees hereby that all wages which may be earned, and all moneys which become due under this contract may be credited to said apprentice upon the books of said Company, and may be paid to him as the same shall accrue.

The said ...., in consideration of the agreements herein entered into by said .... as ...., and by said minor, respectively, does covenant and agree to pay said apprentice for each hour of actual labor performed, in accordance with the terms of this agreement and in compliance with the rules and regulations which said Company may from time to time prescribe and the following:

For the first period of 1536 hours,—cents per hour;
For the second period of 1536 hours,—cents per hour;
For the third period of 1536 hours,—cents per hour;

And it is hereby mutually understood and agreed between all parties hereto as follows: to wit:

That this agreement is to continue in force only so long as said apprentice is attending the Co-Operative School regularly.

That the said apprentice is to report for work every alternate two weeks for a two-week period during the school term, and continuously during the summer vacation except for a period of two weeks' vacation, without pay allowed said apprentice, if he so wishes.

That the said Company reserves the right to reduce the regular number of working hours if, in its opinion, the condition of business renders such a course expedient.

That the said Company reserves the right to dismiss said apprentice and to annul and cancel this argeement or to suspend such apprentice whose work or conduct is unsatisfactory.

That time lost due to any cause must be made up before starting on an advanced period.

That said apprentice must purchase from time to time such tools as are required for the successful pursuance of this course.

That the said Company shall not be responsible to any person or persons in any manner or to any extent for debts which may be contracted by him upon any account whatever during the said terms of service hereunder.

That the said apprentice during all of said term or terms, unless sick or otherwise excused, shall be punctual in commencing his labors and in performing the same, and shall work the regular number of working hours each working day unless otherwise directed by said Company.

And for the true and faithful performance of their respective covenants, as above set forth, the said parties do hereby promise and engage to each other firmly by these presents which are executed in triplicate.

In Witness Whereof, the parties hereto have hereunto set their hand and seal the day and year above written.

. . . .

. . . .

Company.

. . . .

Parent or Guardian.

. . . .

Apprentice.

Part II—Agreement for Student-Apprentice

. . . . with the consent of . . . ., my
guardian,
my parent, who takes part in this Agreement, hereby request . . . . to receive me into their employ as a part of my training in learning the trade of . . . . I assume all risk of life, bodily injury and health, not otherwise regulated by law, and I hereby promise and agree to abide by all the conditions of Part I

of this Agreement, with the provisions of which I admit entire familiarity. I furthermore promise that I will perform all the duties connected with this work faithfully and well.

. . . .
Student-Apprentice.

Date . . . .
Place . . . .

APPENDIX D

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